CHAPTER 5

Rising Life Satisfaction in Korea: A Panel Data Analysis

Christopher P. Barrington-Leigh[1]

1. Life Course Overview: Life Satisfaction in a Rapidly-Changing Society

South Korea presents an important global example for understanding satisfaction with life (SWL), for at least three reasons: (1) life satisfaction in South Korea has been well measured in recent years, (2) average life satisfaction in South Korea has undergone a dramatic rise, significant both in magnitude and statistical surety,[2] and (3) South Korea has simultaneously undergone dramatic industrialization, making it of particular interest in the debate about the relationship between economic growth and subjective well-being (Easterlin *et al.*, 2010).[3] Indeed, South Korea's significant, sustained, and steady rise in SWL stands as a relatively rare documented case along with, for example, the one undergone in Quebec, Canada over 25 years (Barrington-Leigh, 2013).

There is a third empirical stylized fact about South Korea which we may use to embark on the analysis below. While *average* SWL appears to be rising fast, mean SWL by age group declines steadily with age.

1 Thanks to Jung Hwan Kim for assistance with the research, and to John Helliwell and Shun Wang for helpful comments.

2 See Chapter 3.

3 Based on World Values Survey data, Easterlin *et al*. (2010) characterize South Korea's growth in subjective well-being as a "not statistically significant increase". Clearly, in light of earlier chapters in this volume, that view is out of date.

That is, in comparing people of different ages who responded in cross-sectional or panel surveys, older people report, on average, lower life satisfaction. This gives the superficial appearance that the elderly are not faring as well as others in this rapidly changing society.

This is true if we look at the population at a moment in time, and it is also true if we look at a sample of the population pooled over several or many years. However, it turns out not to be true if we follow particular individuals over time. In this chapter, we make use of the KLIPS panel survey to bring to light aspects of the changes in life satisfaction over the 15 years from 1998 to 2012 which are best addressed by following the lives of specific individuals from year to year.

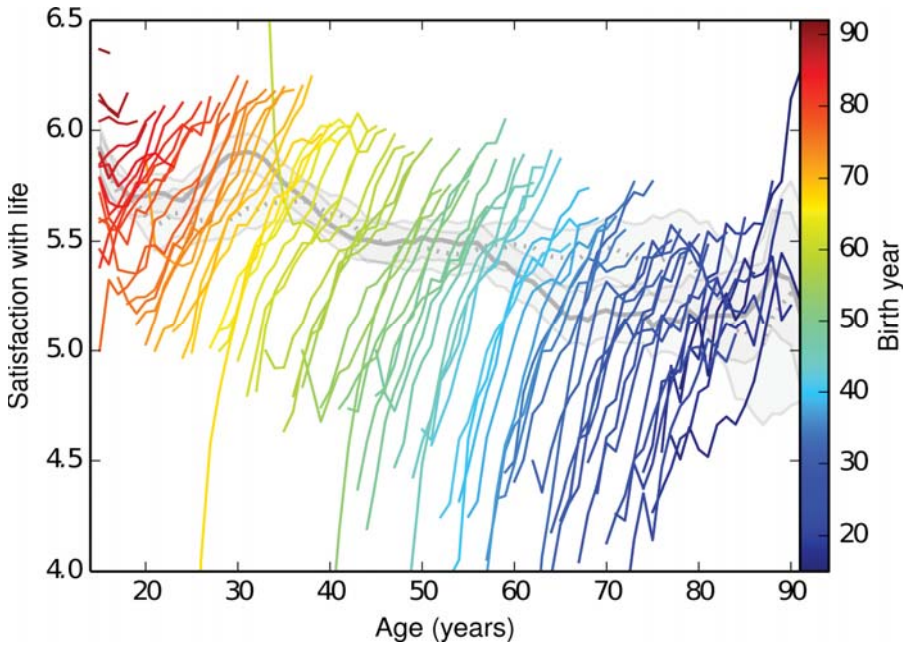
1.1. Increases over Time and Decreases with Age

It is a result of the rapidity of rising income changes and shifts in the social and institutional environment that it becomes easy to confuse a downward trend with age with an underlying shift across cohorts of the population. That is, if people from earlier generations are dramatically less happy overall than those of more recent generations, it will appear as though the currently older are less happy than the currently young. This should not be interpreted, without more careful inspection, as a prediction for the trend in subjective well-being that an individual is likely to experience throughout her life course. In fact, as we shall see, it is instead the case that life satisfaction can be expected to rise over time for individuals over their future lives, regardless of their current age.

Figure 5.1 shows this discrepancy. While individuals are experiencing rising well-being, older cohorts are starting out from a lower well-being level. This difference across generations is so strong as to overwhelm the positive trend experienced by individuals. As a result, in a population cross-section, it appears the elderly are less happy than middle-aged and young people. In fact, SWL reports of individuals of all ages are rising at an astonishing rate. That is, it is likely the case that current middle-aged and elderly people were considerably less happy in their youth than their offspring are in theirs. This realization may immediately relieve some policy concerns that one way or another, shortfalls in state, family, and financial supports for the elderly are putting an undue

burden on them as a collateral effect of the rapid, development-related changes in household structure and savings patterns.

Figure 5.1 Life Satisfaction Trajectories by One-Year Birth Cohort



Notes: Each coloured line shows the mean life satisfaction (scaled 0–10) for respondents of the same birth-year cohort, each year over the first 15 years of the KLIPS panel. Grey lines show the population-averaged means for males (dashed) and females (solid), with bands showing 95% confidence intervals. All data are smoothed with a 5-year exponentially weighted moving average.

1.2. Why the Cohort Trend?

If SWL is not decreasing for individuals as they age, we are left to explain why earlier cohorts are less satisfied with their lives than more recent ones will be at the same age. We may imagine several possible circumstances which could differentiate the generations:

(1) It could be that people from earlier cohorts are simply less well-off since they have spent less of their lives living in the relatively high-income recent period.

(2) More specifically, it could be that they have in particular less appropriate preparation for retirement, i.e. less security in store for their

non-working years and old age, as a result of a shift in old age security from an informal dependence on family to a more individualistic system based on capital accumulation.

(3) On the other hand, the relevant form of capital affecting life satisfaction reports could be more embodied in humans themselves: if life satisfaction reflects the past, rather than just future expectations, then relative hardships in one's youth, infancy, and epigenetic makeup could be behind "set-points" in life satisfaction that persist despite the generally improved conditions of modern life and the universally-shared public goods that it has brought along.

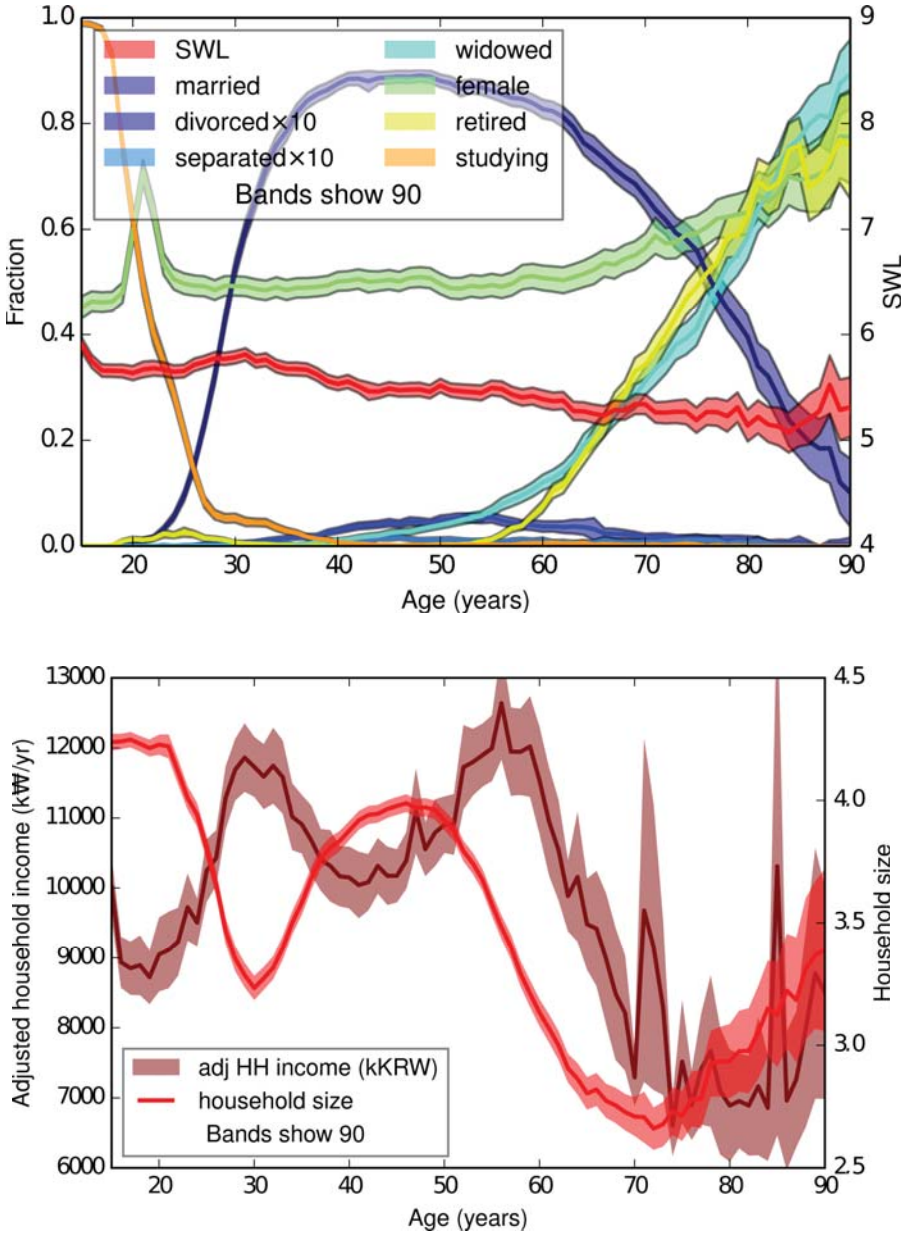
In the sections which follow, we partly address this question by estimating the influence of factors over the life course and, where possible, across cohorts. While this is in general a difficult distinction to identify econometrically, it is made easier in the case of South Korea by the fast rate of change underway across generations.

2. Changing Circumstances throughout the Life Course

In order to give an overview of the context and complexity of life cycle effects impacting life satisfaction, Figure 5.2 presents mean values by age for several variables. In red, and using the right hand side scale, is SWL shown again declining nearly monotonically over the range of ages. The width of each trace in this plot shows its 95% confidence intervals. The remaining traces show the fraction of respondents falling into each dichotomous category. As we shall see, gender is an immediately important factor in understanding life course events, and therefore matters when characterising life changes surrounding retirement.

Gender fractions in KLIPS diverge twice. First of all, during the ages of military service for men, the response rate for men declines steeply, leading to the first, temporary spike in the female fraction. Later in life, the longer life span of females leads to a dramatic difference in gender fractions by age 90.

Figure 5.2 Life Circumstances over the Life Course



Notes: The upper panel shows life satisfaction (in red, declining, with scale on the right) and several demographic conditions (shown as fractions of the population, with scale on the left) averaged by age of respondents. The lower axes show household size and a measure of real (price-corrected) household size-adjusted income, calculated as annual income divided by the square root of the household size.

The marital states are strong predictors of subjective well-being outcomes, and their prevalences vary significantly over the life course. Therefore, when considering the family, domestic, and financial supports experienced by the retired and elderly, these relationship changes will be important context. For instance, the rate of widowhood rises with similar rate and timing to the retirement fraction, making it important to account for both effects on SWL independently.

It is common practice to assume that household incomes, rather than individual incomes, are the most salient measure in accounting for individual differences in life satisfaction. This reflects both the collectivity (pooling of resources) of households as well as the economies of scale in accommodation and living costs. In order to account best for these economies of scale, household income is scaled to an individual income equivalent, often by dividing by the square root of the number of household members. As can be seen in Figure 5.2, there is some natural inverse correlation between this corrected income and the household size. Moreover, the dynamics of cohabitation and household size are complex over the life course, with visible swings as children depart from their parents, as they marry and raise families, as their own children leave, and then, in their old age, as they once again join other households or group living environments.

2.1. Age-pooled Model

Next, we may consider the estimated contributions of these naturally time-varying life-course conditions towards explaining the overall progression of life satisfaction. For this purpose, SWL is modeled according to a simple linear equation, as is used nearly universally in accounting for life satisfaction differences, except that in this case age is not explicitly included:

$$SWL_{it} = b_0 + bX_{it} + (\mu_i + \varepsilon_{it}) \quad . \tag{1}$$

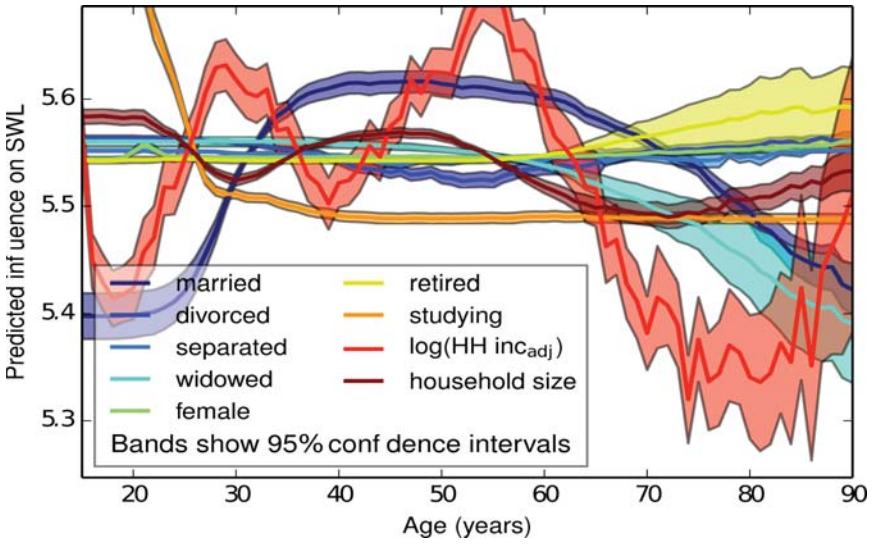
Here, X_{it} represents a vector of the variables[4] shown in Figure 5.2 for

4 In place of the real adjusted income shown in Figure 5.2, this specification uses an

individual *i*'s response during year *t*, and the error term includes an individual-specific cluster term μ_i in addition to the observation-levelerror ε_{it}.

An OLS estimate of Equation (1) yields highly significant coefficients on each term.[5] Combining these coefficients with the estimates shown in Figure 5.2 provides the explained contributions[6] of each variable over the life course, which are shown in Figure 5.3.

Figure 5.3 Predicted Age Dependence of SWL



Notes: Based on the life cycle patterns shown in Figure 5.2 and on an age-free model of SWL, traces show the predicted influence of different life circumstances on the average SWL for each age group.

These estimated influences show the overall role of each condition in explaining SWL differences across the population; that is, they reflect both the incidence of each state (as shown in Figure 5.2) and the

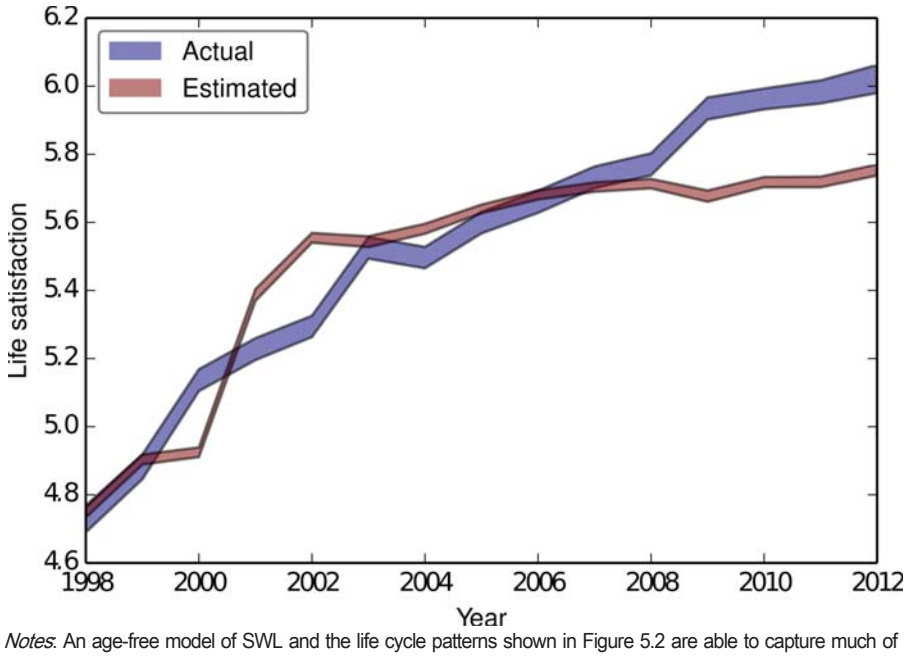
inverse hyperbolic sine transformed version of the real adjusted income in order better to capture the variation and the concavity in income's effect on SWL, and in order to incorporate nonpositive income values (See Burbidge, Magee, and Robb, 1988; Johnson, 1949). The $sinh^{-1}$ transformation is: $sinh^{-1}(x) = log(x + (x^2 + 1)^{1/2})$, and is similar to a simple logarithm for values well above zero.

5 See Table 5.5 in appendix for details.

6 The estimate shown for each variable assumes that all other variables are held at their population average.

magnitude of its effect on SWL. However, a key assumption facilitating this decomposition is that this marginal effect of each condition on an individual's SWL does not change significantly over the life course, nor over time. For instance, it assumes that the impact of being widowed can be expected to be the same for a 30 year old and an 80 year old. In addition, the estimate pools together people of the same age but different cohorts. As we have seen above, there may be significant differences in terms of the experience of successive cohorts. Nevertheless, as shown in Figure 5.4, with just this simple model we are able to capture the majority of the increase in SWL experienced by South Koreans over the period of the KLIPS panel. We next consider another possibility for comparing the relative contributions of different sorts of changes to life over this period.

Figure 5.4 Prediction of Population Mean SWL



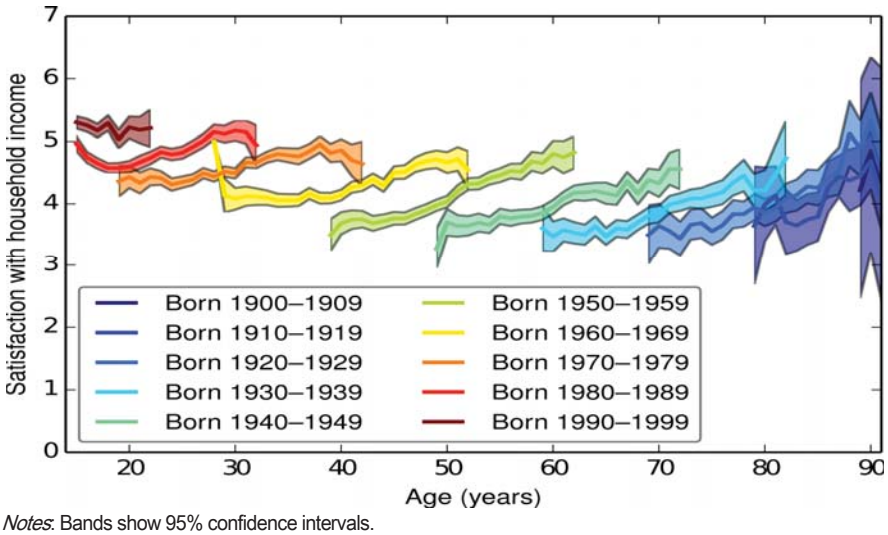
Notes: An age-free model of SWL and the life cycle patterns shown in Figure 5.2 are able to capture much of the rise of SWL since the beginning of the KLIPS survey.

2.2. Domain Satisfactions

One place to seek insight into the drivers of such a prominent increase in life satisfaction is to appeal to other subjective evaluations. The KLIPS survey asks respondents to rate their satisfaction with several domains of life. By separating out, once again, individuals into different birth cohorts, we may assess qualitatively the degree to which systematic national shifts in certain life circumstances are contributing to better lives overall and across cohorts, and the degree to which preexisting differences across cohorts persist with respect to each circumstance. Four representative domains are shown in Figures 5.5 to 5.8. For clarity of the confidence bands, we consider 10-year cohorts.

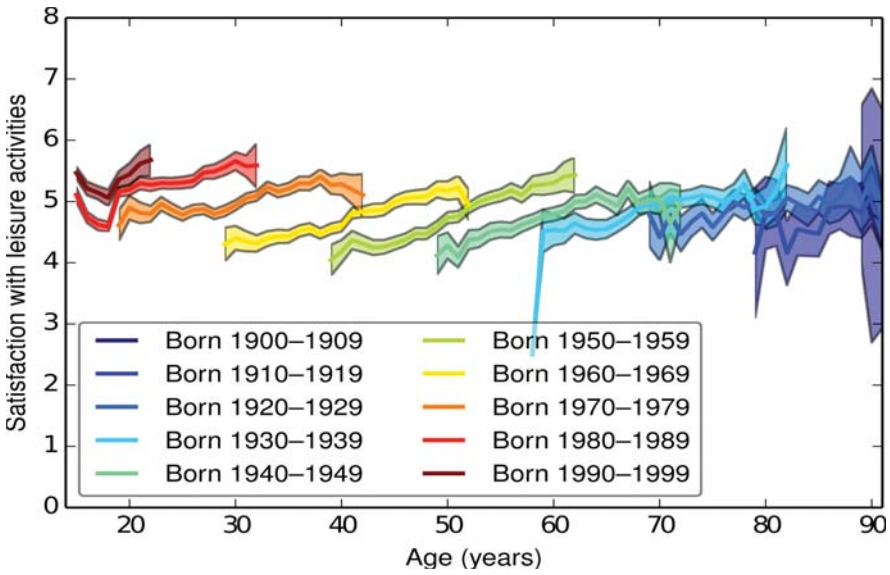
According to these measures, satisfaction with income has risen rapidly for most cohorts over time, including those who have been transitioning into retirement age, and even those who are in their later years. While an overall U-shape in satisfaction with income over the life course is visible in Figure 5.5, it is unclear from these data than any individual cohort is likely to experience such a dip in middle (or retirement) age. For most successive cohort groups, there is again a very significant difference between satisfaction levels at a given age.

Figure 5.5 Evolution of Satisfaction with Income by Cohort



Notes: Bands show 95% confidence intervals.

Figure 5.6 Evolution of Satisfaction with Leisure by Cohort

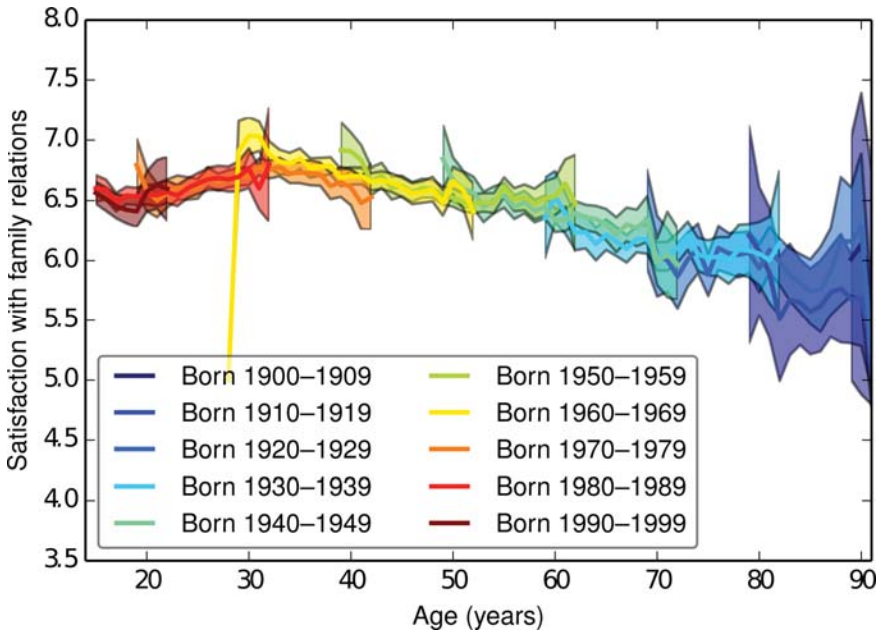


Notes: Bands show 95% confidence intervals.

Interestingly, satisfaction with leisure activities, in Figure 5.6, shows a similar overall pattern of increase for every cohort. By contrast, Figure 5.7 gives evidence that some things are not changing over time. Successive cohorts experience a remarkably similar life cycle progression of subjective experience with respect to their family relations. This suggests a fairly robust pattern in which satisfaction peaks in the early thirties when, according to Figure 5.2, many people have recently married and are starting their own families. The subsequent decline in satisfaction with family relations is particularly pronounced among the most elderly respondents. These data show that population average satisfaction with family relations is not likely to be increasing nor decreasing over time except insofar as it is driven by changes in the age distribution.

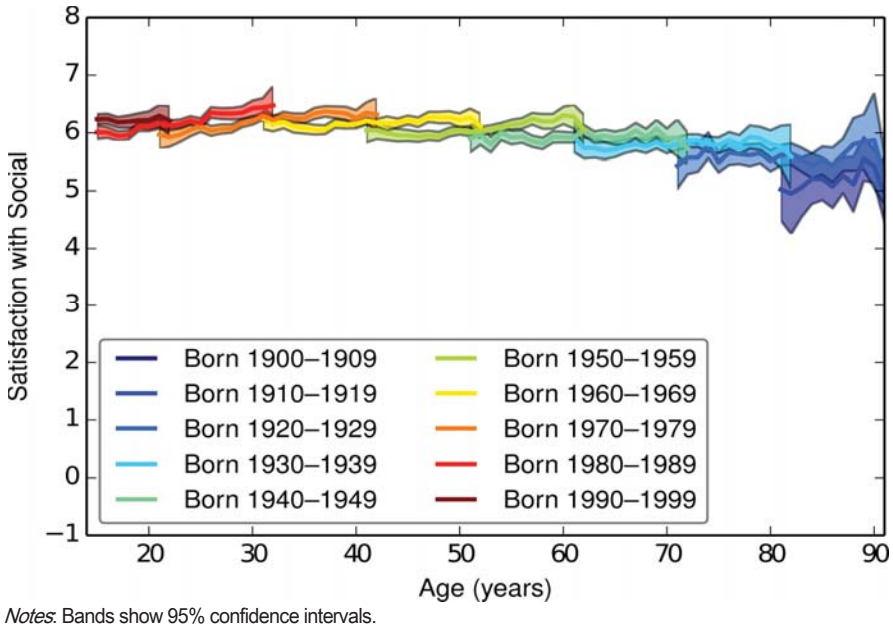
Lastly, satisfaction with social relations, depicted in Figure 5.8, shows signs of significant increases for individuals over time, above what appears to be the underlying life course curve. While both the trends for individuals and the differences between cohorts are much more subtle, there are still significant rises over time for most cohorts until retirement age.

Figure 5.7 Evolution of Satisfaction with Family Relations by Cohort



Notes: Bands show 95% confidence intervals.

Figure 5.8 Evolution of Satisfaction with Social Relations by Cohort



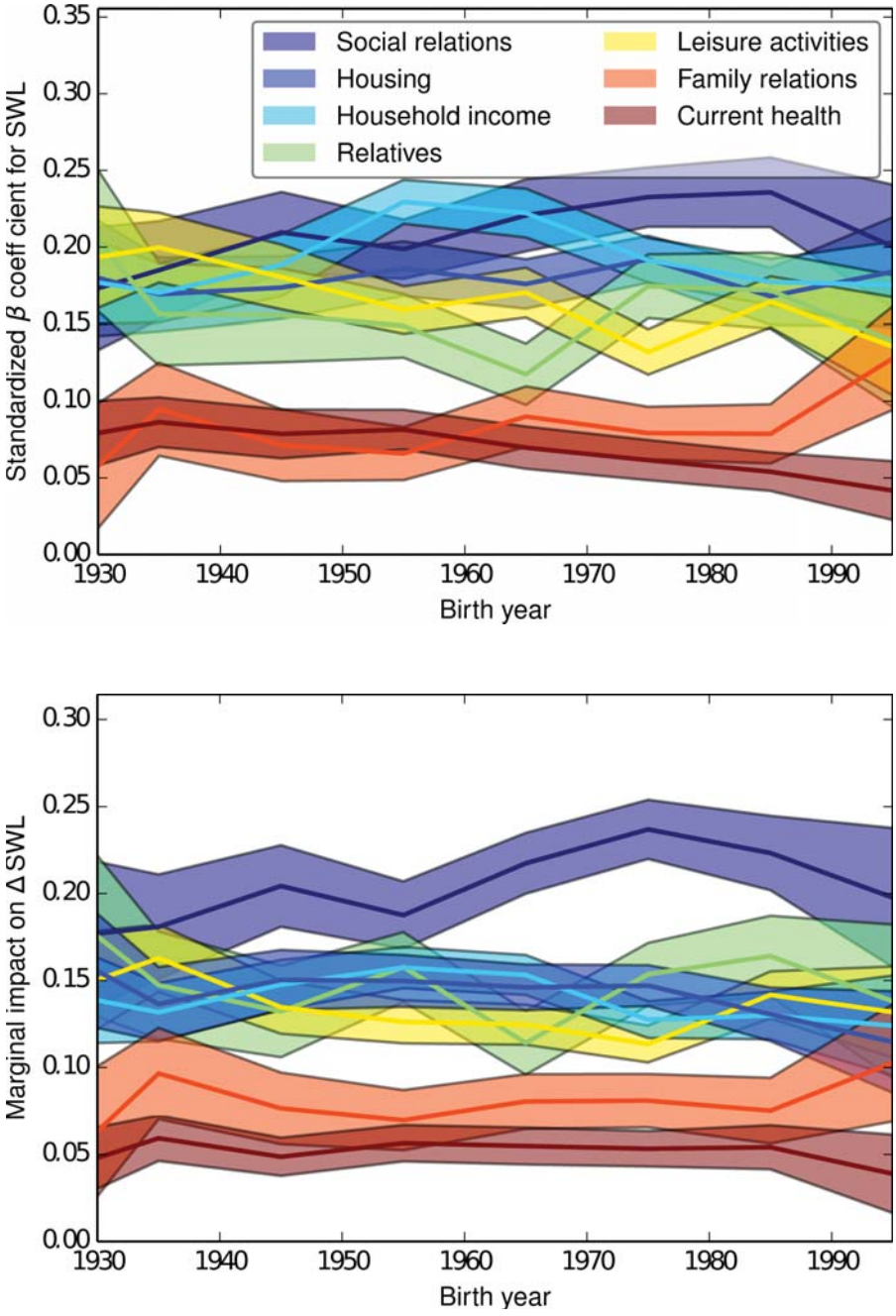
Notes: Bands show 95% confidence intervals.

Overall, the evidence from these domain satisfactions indicates a heavy role for income growth in accounting for the SWL gains experienced by South Korea since 1998. The KLIPS panel does not have a large collection of more objective indicators of the social and institutional experiences of respondents, and evidence from international data suggests that these non-market measures play dominant roles in explaining differences in life satisfaction around the world (e.g., Helliwell and Wang, 2013). Without explicit measures for changes in the social fabric and experience, effects of such missing variables may appear in SWL regressions as a result of their covariance with income and income changes. Nevertheless, from the vantage point of the measures at hand, the rapid evolution of economy and society over the last decade and a half in South Korea appears to have led to major gains in SWL in large part due to income changes, in addition to improving social relations and leisure options. Above all, there is still no strong evidence, after perusing the domain satisfaction data, that the elderly are experience a very different outcome than the positive changes reported by the rest of the population.

3. Relative Weight of Domains

One key piece of context for interpreting the findings on domain satisfaction in the previous section is the relative importance of different domains in accounting for overall life satisfaction (van Praag, Frijters, and Ferrer-i-Carbonell, 2003). On the surface, it may seem that estimating the dependence of a subjective variable, like SWL, on a set of other subjective variables, like domain satisfactions, is liable in principle to incur arbitrarily large measurement error problems. On the other hand, in contrast to the warnings given by Bertrand and Mullainathan (2001) for explaining subjective outcomes with objective conditions, it is in the accounting to follow precisely the subjective couplings between one report and another which are to be identified. Rather than being the source of endogeneity, a subjective bias causing a high or low report of one domain satisfaction and a corresponding shift in an individual's report of SWL may in fact be seen as a subjective shock to that domain, which is the object of study. Even to the extent

Figure 5.9 Domain Satisfaction Weights



Notes: Bands show 95% confidence intervals.

that such subjectivity in assessments can philosophically or psychologically be considered a mistake, we are interested in the relative linkages between any shifts ("mistakes" or otherwise) in the various domain satisfactions and their corresponding shifts on SWL. Regardless of the possible subtleties in interpreting such an exercise, we can look for consistency of estimates across groups of respondents, and for systematic differences in the estimated weights across domains.

Accordingly, the upper panel of Figure 5.9 shows the relative importance of seven subjective domain reports in explaining individual life satisfaction responses. These include six domain satisfactions, along with respondents' subjective assessment of their current health status. In order to look for cultural shifts in priorities (or in salience), we have separated respondents based on their birth year, and carried out completely independent estimates for each ten-year birth cohort group.[7] Because of this coarse resolution, we make no distinction here between cohorts and age.

The vertical axis shows the standardized OLS regression coefficient, which indicates the effect on SWL, measured in standard deviations of SWL, of a one standard deviation change in the subjective domain report. The prominent features of this analysis are that (1) there is a great deal of consistency across cohorts or age groups, and (2) that social, income, and housing satisfactions show the tightest link to SWL, while variation in current health and satisfaction with family relations explain the least of the cross-sectional variation in SWL.

The same domains of life appear to figure strongly in respondents' subjective assessment of life overall, regardless of which generation the respondent was born into — or, equivalently, over more than six decades of age. There may be weak trends, such as a declining importance of leisure satisfaction and health status for the older respondents, but these are not strong.

A more convincing way to interrogate the relationship between changes in domain satisfactions and overall life evaluation may be to look at changes in each respondent's evaluations across successive

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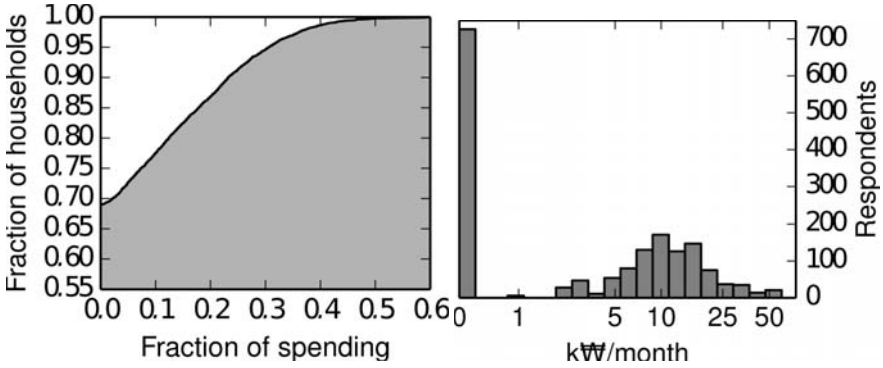
7 The specification is otherwise as in Equation (1), with X_{it} denoting the vector of domain satisfactions, except that coefficients are now reported as standardized β coefficients. The estimation results are provided in tabular form in the Appendix Table 5.2.

survey cycles. The results of such a fixed effects estimate[8] are shown in the bottom panel of Figure 5.9. Now the primary importance of social relations becomes even more distinct. Overall, the results are remarkably consistent with the cross-sectional estimate of the upper panel, and the magnitudes are remarkably steady throughout the life course.

4. Private Tutoring

Next we turn to an issue somewhat particular to South Korea, on which the KLIPS data are well-suited to shed some light. Payments for private, supplementary schooling and tutoring have become a considerable part of overall household expenses, and in total they rival government expenditure in the public education system (Dang and Rogers, 2008); see Figure 5.10. In order to look at this practice from the lens of subjective well-being, we consider two questions: (1) Does increased spending on a child's education contribute to the child's later

Figure 5.10 Distribution of Household Spending on Private Education



Notes: The left panel, (a), shows the cumulative distribution of household spending on private education in the 2012 cycle of KLIPS. The private education spending is shown as a fraction of total household expenditures. While about 70% of households do not spend on supplementary private education, for those who do, it comprises a large fraction of their overall spending. Panel (b) shows the distribution of spending in 2000 (nominal currency) on select categories of private education enjoyed by respondents who were children in 2000 and are adults in the KLIPS panel in recent years.

8 The specification is now a model of changes in SWL:
$\Delta SWL_{it} = c + b\Delta D_{it} + (\mu_i + \varepsilon_{it})$, (2)
where D_{it} is a vector of the domain satisfactions, and Δ denotes changes from one year to the next.

overall quality of life? (2) Do families suffer from the burden of high expenditures on their children's education?

The first addresses the long term benefits of investing in supplemental, private education. By linking panel respondents who were in their late 20's and early 30's in the last three waves of KLIPS to the households in which they grew up in Wave 3 of the panel, one can identify the private educational expenditures made on each child. These expenditures may be expected to impact young students in lasting ways through effects on socialization, academic performance and success, and through future job market outcomes. Of course, such expenditures may also represent proxy measures for other household and family resources, parental attention, and so on which are not independently measured in the survey. In fact it is difficult — due to the dearth of variables measuring social outcomes in KLIPS — to assess adequately the non-market benefits of childhood investment such as private tutoring. In the absence of a full set of outcome measures, we are also more likely to misattribute benefits towards those measures which are available.

Nevertheless, using the available data we can triangulate on the potential benefits of private schooling. The first eight columns of Table 5.1 show estimates of adult respondents' life satisfaction[9] in one of the years 2008–2012, when they were between 26 and 31 years old. Each respondent included in this recent sample was between 14 and 19 and living in a KLIPS sampled household in 2000, when the questionnaire included a detailed characterization of household expenditures on schooling.[10]

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9 The estimates in the first section of this table are of the form

$$SWL_{it} = b_0 + b_1 X_{it} + b_2 C_{it_0} + (\mu_i + \varepsilon_{it}), \qquad (3)$$

where subscript t_0 denotes the year 2000, while t corresponds to the observed cycle or cycles since 2008. The X_{it} are contemporary observed characteristics while C_{it_0} are circumstances from childhood. The clustered error μ_i allows for multiple recent observations t to be used. In accordance with standard findings, the OLS model, which relies on an unlikely cardinality assumption for SWL, is used here because it provides nearly identical estimates to those derived from an ordered logit model, which relaxes that assumption (Ferrer-i-Carbonell and Frijters, 2004).

10 Only waves 3 (in 2000), 4, and 5 include breakdowns of households' private education expenses for each child. The first of these has the natural advantage that more children have grown up to labour market age before 2012, our most recently available data. The following categories of private education are included in the

Column (1) shows that controlling only for the exogenous characteristics of age and gender, family expenditure on a child in 2000 predicts a higher response to the SWL question from that grown child in recent survey waves. This effect remains unchanged when the social outcomes of marriage status are included (column 2). In column (3) we control for both the household's overall adjusted income in 2000 and the highest level of education among all household members in 2000. Including these indicators of educational resources leaves the importance of the private education expenditures nearly unchanged (column 3). This suggests that the specific nature of the child-focused spending may have significance beyond the general affluence and resources which enable it.

In order to investigate private education effects on well-being beyond those which come through income, we first model life satisfaction as dependent on childhood education expenditure specific to the respondent, along with measures of the respondent's current income (individual and household) later in life. This is shown in columns (4) and (5). We notice, first of all, that contemporary income benefits come primarily through collective (household) income for the adult offspring, rather than through individual earnings. Secondly, it appears that the education investments delivered in childhood may have no net well-being benefits beyond those accounted for by income. This follows from the fact that the coefficient estimates for private education expenses are significantly reduced and no longer statistically different from zero, after one has controlled for adult income.

Higher eventual educational attainment is a natural, causally-proximate outcome of extra effort and investment in childhood education. Below we find that it is the most likely channel through which benefits to income and well-being are flowing. In columns (6) and (7) we include a

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present analysis when they are paid for, while several other categories more related to "childcare" are excluded: (1) family or relatives who live together with respondent; (2) family or relatives who live together with respondent; (3) family or relatives who don't live together with respondent; (4) non-relatives who live together with respondent; (5) non-relatives who don't live together with respondent; (6) private academies; (7) personal/ group tutor; (8) study guides; (9) after school programs (in school); (10) after school programs (outside of school); (11) away-from-home language courses; (12) paid internet/online courses; (13) cultural centre; and (14) other.

Table 5.1 | Adult Outcomes of Children Who Were Tutored

	SWL							log(own after-tax income)		education level	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
male	−.11	−.055	−.058	−.15	−.12	−.069	−.095	.071	.079	.069	.054
	(.11)	(.10)	(.10)	(.11)	(.10)	(.097)	(.099)	(.060)	(.061)	(.096)	(.085)
married		**.69**†	**.72**†	**.76**†	**.72**†	**.80**†	**.78**†	***.16***	***.16***		
		(.12)	(.12)	(.11)	(.11)	(.10)	(.10)	(.081)	(.082)		
sep/div/wid		**−1.33**†	**−1.34**†	**−1.02**†	**−.87**†	**−1.00**†	**−.68**†	**−.88**⋆	**−.89**⋆		
		(.25)	(.22)	(.17)	(.13)	(.23)	(.16)	(.33)	(.34)		
age 26–30	**6.2**†	**6.0**†	**4.9**†	**3.9**†	**1.73**⋆	**3.2**†	.60	**7.2**†	**6.7**†	**6.3**†	**4.8**†
	(.080)	(.084)	(.36)	(.64)	(.66)	(.37)	(.69)	(.050)	(.20)	(.072)	(.39)
age 31–35	**6.1**†	**5.9**†	**4.6**†	**3.8**†	***1.71***	**2.9**†	.54	**7.5**†	**6.9**†	**6.1**†	**4.7**†
	(.38)	(.41)	(.51)	(.74)	(.75)	(.53)	(.81)	(.20)	(.28)	(.25)	(.46)
log(own after-tax income)				**.23**⋆	.004		−.008				
				(.079)	(.092)		(.089)				
log(HH inc_{adj})					**.55**†		**.52**†				
					(.088)		(.085)				
education level						**.32**†	**.24**†				
						(.054)	(.062)				
2000: priv. educ. expense	**.009**⋆	**.010**⋆	***.007***	.003	.002	.004	.0003	*.003*+	.002	**.014**†	**.009**⋆
kW/m	(.003)	(.003)	(.003)	(.004)	(.003)	(.003)	(.003)	(.002)	(.002)	(.004)	(.003)
2000: log(HH inc_{adj})			**.22**†	**.15**⋆	***.11***	**.18**†	.091		.018		*.10*+
			(.060)	(.058)	(.055)	(.055)	(.056)		(.038)		(.056)
2000: parents' education			.045	−.0010					***.076***		**.20**†
			(.055)	(.057)					(.034)		(.058)
obs.	1783	1783	1747	1257	1210	1747	1210	1287	1262	1793	1757
R^2(adj)	.952	.954	.954	.959	.960	.956	.961	.990	.990	.983	.985
$N_{clusters}$	690	690	678	511	508	678	508	523	513	690	678

Notes: Standard errors in parentheses are clustered at the individual level. Significance: + 10%, ***5%***, * 1%, † 0.1%.

measure of educational attainment[11] and find that, like the contemporary income measures, it might account completely for the effect of childhood educational investments, which are no longer significant. However, parental family income remains important at least until both contemporary income and education are included (column 7).[12]

To further test the apparent role of adult income or adult education levels in mediating the positive influence of childhood education investments on adult SWL, columns (8)–(9) and (10)–(11) show estimates of adult respondents' own income and education level, respectively, based on their circumstances in childhood. These results do not provide strong evidence for an effect of private educational investments on the future income of students, though they also cannot rule out a ~3% rise in income for each ~₩ 10k spent per month. A stronger relationship is estimated for the final educational outcomes of children.

Taken together, the estimates show, somewhat intuitively, that well-being is correlated with parental investments in private education and that this particular effect comes through better educational outcomes and possibly higher incomes. However, two caveats limit the causal interpretation of this finding. First, while we chose the earliest cohort with available data in order to maximise the size of the corresponding adult sample, the model can also be applied to children identified in waves 4 and 5. Estimates for these overlapping sets result in somewhat smaller samples but give smaller and insignificant indications of any benefit to later subjective well-being from educational investments by the household.[13] Secondly, as already mentioned, educational expenditures likely represent a proxy measure not only for household financial means, which are controlled for in our estimates, but also for other, non-pecuniary investments by family in their children's upbringing and

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11 This is a numeric scale with the following levels: (1) no schooling; (2) elementary school; (3) lower secondary; (4) upper secondary; (5) 2-years college, vocational, technical; (6) university (4 years or more); (7) graduate school (master's); (8) graduate school (doctoral).

12 Similar results are obtained with matched samples from model to model.

13 While smaller and insignificant, estimates from waves 4 and 5 cannot rule out the large main effect found in column (3) for private expenditure, which suggests a ₩ 10k/month expenditure may have an outcome on SWL similar to a ~15% increase in adult household income. Estimates are available from author upon request.

education.[14] As a result, our approach may be most useful as an estimate of upper bounds for the direct or specific effect of private education supplements.

4.1. Contemporary Expenditures on Education

Secondly, we investigate the effects of childhood educational investments on the family members at the time the investments are made, rather than later in the life of the supported child. We consider households paying for private education for one or more children, and model the life satisfaction of household members who are older than 27 years and not currently students.

In order to investigate correlations between such expenditures and SWL, we proceed with a cross-sectional model because educational expenditures, in particular, are usually foreseen and sustained. Column (1) of Table 5.2 reports estimates of a linear model of SWL as a function of each household's (HH) income in log adjusted form and measures of total expenditure on children's private education as well as on all other household expenditures. In principle, some expenditures may be experienced as burdens on a household's finances, while others may represent discretionary consumption. Differentiating between such psychological dispositions, along with those related to income and savings, in a reduced-form model of SWL is not a feasible objective, but we can nevertheless speculatively identify some noteworthy trends.

Interesting, all three coefficients have positive estimates. Expenditures are measured in ₩ 1M/month,[15] so that the coefficient on private

14 This is not altogether obvious, as private educational expenditures are also likely to *substitute* to some degree for time with parents or family. In addition, we do control for parents' education, which is likely to be an even better proxy for non-pecuniary investments.

15 Expenditures enter into the model linearly, so that effects of the two categories may be added, while income is log-transformed in the canonical way. In principle, if expenditures correspond to consumption, we might expect them to relate more closely to utility than would measures of income, which is more typically all that is available in social survey data. However, given what is known about the role of social preferences over income—for instance, in the form of income comparison effects—we agnostically include both income and expenditure measures in the model.

Table 5.2 Life Satisfaction and Expenditure on Education

	2012			2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	1999
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
log(HH inc_{adj})	**.57**†	**.58**†	**.59**†	**.50**†	**.50**†	**.54**†	**.57**†	**.57**†	**.55**†	**.53**†	**.42**†	**.52**†	**.48**†	**.50**†	**.26**†
	(.041)	(.040)	(.040)	(.034)	(.036)	(.034)	(.032)	(.035)	(.034)	(.037)	(.036)	(.034)	(.037)	(.033)	(.026)
PR: log(GDP/capita)		***−.21***		***−.18***	**−.34**†	**−.49**†	**−.40**†	**−.36**†	**−.30**†	−.019	**.23***	**−.25***	*−.17*$^{+}$	**−.32***	*−.22*$^{+}$
		(.093)		(.085)	(.076)	(.085)	(.081)	(.082)	(.083)	(.078)	(.087)	(.090)	(.094)	(.10)	(.12)
private edu. spending	**.35**†	**.34**†	**.33**†	**.47**†	**.35**†	**.44**†	**.44**†	**.45**†	**.55**†	**.47**†	**.37**†	**.45**†	**.52**†	**.70**†	**1.15**†
	(.092)	(.093)	(.093)	(.075)	(.067)	(.068)	(.070)	(.062)	(.066)	(.070)	(.074)	(.079)	(.078)	(.10)	(.14)
PR: private edu. spending		*1.53*$^{+}$		**2.1***	***1.25***	−.16	**−2.3***	***2.3***	**2.7**†	**−2.1***	**−2.1***	−.64	.23	−.82	.81
		(.89)		(.66)	(.56)	(.63)	(.77)	(.96)	(.75)	(.75)	(.76)	(.70)	(.76)	(.76)	(.80)
other spending	**.24**†	**.23**†	**.23**†	**.25**†	**.24**†	**.23**†	**.27**†	**.22**†	**.23**†	**.34**†	**.33**†	**.25**†	**.36**†	**.27**†	**.52**†
	(.030)	(.030)	(.030)	(.026)	(.029)	(.028)	(.028)	(.026)	(.030)	(.033)	(.034)	(.036)	(.033)	(.035)	(.039)
PR: other spending		−.12		***−.26***	*−.25*$^{+}$	−.008	.17	**−.73**†	**−1.21**†	**−.73**†	**−.57***	**−.96**†	**−1.10**†	**−.62***	**−1.12***
		(.12)		(.11)	(.13)	(.14)	(.16)	(.17)	(.17)	(.19)	(.19)	(.16)	(.22)	(.23)	(.38)
constant	**1.50**†	**5.1***	**1.28**†	**5.2**†	**8.0**†	**10.0**†	**8.1**†	**8.5**†	**8.1**†	**3.4***	−.41	**7.4**†	**5.8**†	**7.7**†	**7.3**†
	(.26)	(1.56)	(.27)	(1.44)	(1.30)	(1.45)	(1.37)	(1.40)	(1.41)	(1.30)	(1.44)	(1.48)	(1.48)	(1.66)	(1.90)
Region f.e.			✓												
obs.	9245	9243	9245	9133	9189	9225	9192	9005	9122	8954	8850	8580	8198	7912	8517
R^2(adj)	.139	.141	.154	.153	.137	.142	.171	.152	.153	.158	.127	.129	.152	.138	.098
$N_{clusters}$	5244	5242	5244	5145	5140	5055	4942	4841	4784	4635	4526	4314	4092	3958	4220

Notes: Expenditure measures have units of ₩ 1M/month. "PR:" denotes a mean value in the household's province or city in the year of the survey. The first three columns focus on 2012 data; the remaining columns correspond to different years. Data are not available for 1998 nor 2000. Standard errors in parentheses are clustered at the individual level. Significance: $^{+}$ 10%, ***5%***, * **1%**, † **0.1%**.

education expenditures in column (1) can be interpreted by saying that a ₩ 1M/month higher rate of expenditure predicts a 0.35/10 increase in life satisfaction, or as much as a near-doubling of household income. Because the children receiving the private instruction are not in the sample, one might not expect such a strong or positive association between this expenditure and SWL. Indeed, it is a stronger effect than that of the other combined expenses incurred by households. The positiveness of all coefficients may reflect the fact that expenditure measures account for some of the measurement error in reported income, or that parents derive altruistic pleasure from investing in children's education, or that they derive benefit from such expenditure as a form of conspicuous consumption.

In the second column we also include a measure of the local social convention, in the form of mean expenditure on private education in the province or city of the household, as well as mean expenditures on other things, along with the average GDP per capita in the province or city of the household. These three aggregate measures represent possible reference levels in individuals' preferences, as well as a measure of standards set, for instance, in the contest of scholastic performance. From this description, we might expect all three estimated coefficients to be negative. We do estimate a negative coefficient on others' aggregate income; it is a large fraction of (yet significantly smaller than) the individual income coefficient. Comparable coefficients are consistent with a large literature on income comparison effects at various spatial scales (e.g., Luttmer, 2005; Barrington-Leigh and Helliwell, 2008) and important in the context of explaining the "Easterlin Paradox" (Easterlin, 1974).

Similarly, the coefficient on others' spending is large and negative; in fact, it outweighs the effect of own spending, suggesting that, holding all else equal, a uniform increase in expenditures across the population would leave all worse off in terms of well-being. This finding of a Veblen effect (consumption externality) on expenditures has been less frequently reported (e.g., Fafchamps and Shilpi, 2008).

However, the comparison level of others' expenditures on private education does not attract a negative coefficient in our estimate for 2012. We would understand a negative sign of the coefficient in one of two

ways. The first is as a reflection of the competitive externalities in education; that is, by the fact that relative performance of students may matter most, so that one household's investments raise the standard for actual student achievement in their academics. In addition, this coefficient could capture the general income comparison effect, if education expenditure is, as mentioned above, a proxy for income or wealth, which again has an externality due to comparison, or "Veblen" effects. We return to this possibility below. Nevertheless, a positive coefficient implies instead, at least in a causal interpretation, a *positive* externality of others' private education expenditures ultimately benefiting household members' own SWL. Possibly, this could come about through education spillovers arising from a generally high level of attainment and expectations in the public education system, which could benefit children in the household, general levels of economic opportunity in the locale, or even general levels of social capital and public investment.

In column (3) we provide a robustness check against the existence of other important regional factors which covary with the three local standards of income and spending levels. This is accomplished by including fixed effects at the province/city level.[16] We find unchanged coefficients across all three of the first columns, indicating that the income and spending reference levels are capturing the salient features of regions well, and that households are fairly well mixed across regions, at least in terms of income levels.

Curiously, however, the structure of estimated coefficients in this simplistic model is not constant over survey cycles. The remaining columns show estimates of the model from column (2) applied to other years of the KLIPS survey. The apparent effects of income and, except for the earliest two years, both expenditure variables, are remarkably consistent. The estimates of comparison level effects, on the other hand, vary considerably. Of particular interest are the coefficients on average private educational spending, which may have been large and negative

16 These regions are: (1) Seoul; (2) Busan; (3) Daegu; (4) Daejeon; (5) Incheon; (6) Gwangju; (7) Ulsan; (8) Gyeonggi-do; (9) Gangwon-do; (10) Chungcheongbuk-do; (11) Chungcheongnam-do; (12) Jeollabuk-do; (13) Jeollanam-do; (14) Gyeongsangbuk-do; (15) Gyeongsangnam-do; (16) Jejudo.

— in agreement with the hypotheses articulated above — in some earlier years and trended towards positive in recent years. The negative coefficient on others' education investments, which greatly outweigh the positive coefficients on own expenditure (in 2003–2005 and 2008) may imply the existence of a highly inefficient "rat race" in which the social norm greatly overemphasizes this kind of expenditure, beyond the socially efficient level. That is, since the sum of these coefficients is negative, life satisfactions of all may be higher if everyone scaled back spending in this category. However, the estimated effect varies more than credibly over time so that further investigation beyond what can be accomplished in the present study is needed to shed light on the question.

The estimated effect of the rest of household spending is, while variable, nearly consistently negative and extraordinarily large. Again, a significantly negative sum of coefficients on own and others' spending is consistent with a truly inefficient equilibrium and immiserating growth. While all incomes and expenditures are corrected for price level changes over time, geographic variation in costs are part of the variation in expenditures, so one might interpret these coefficients by saying that in terms of experienced well-being, the benefits of living somewhere expensive in South Korea are far outweighed by the costs. In order to shed more light on the important question of consumption externalities in the context of a broader set of predictors of life satisfaction, we next proceed with a more general specification and individual fixed effects estimates of the KLIPS panel.

5. Geography, Gender Differences, Reference Effects, Education, and Labor Force

In the sections above we have investigated the subjective experience of individuals throughout the period of the panel and we have found evidence of consumption externalities in estimating the effects of own and others' income and expenditure on SWL. We now broaden the scope in order to include a wider set of explanatory factors in accounting for variation in SWL, in order to shed light on the general question of what

has given rise to happier individuals and to individuals becoming happier in South Korea, throughout the years of KLIPS coverage. However, as mentioned earlier, the selection of survey questions in KLIPS determines the set of statistical questions we may pose. In this regard, there is relatively little scope for due representation of the non-market components of life which have been emphasized throughout the SWB literature.

In Table 5.3 we show a representative cross-sectional estimate for SWL. The large KLIPS sample allows for a relatively large number of regressors, including indicators for each province/city area, age profiles, and occupation and employment effects. The first four columns incorporate an increasing collection of fixed effects: in column (1) there are no regressors beyond those shown, while column (2) includes 5-year age group fixed effects, column (3) adds calendar year fixed effects, and column (4) adds year×region fixed effects. We use the column (3) estimate as our baseline because it allows for the inclusion of region-level contextual effects of per capita GDP, average household income, and average household spending.

Strong consistency exists among these four estimates, giving support to the general patterns described below. In columns (5) and (6) we estimate a very similar model of changes — rather than levels — in reported SWL and corresponding changes in individual and regional circumstances. Column (6), which includes year fixed effects in addition to respondent fixed effects, is our baseline panel model.

Table 5.4 repeats the two baseline specifications in columns (1) and (2) and then shows reestimates of the baseline models for a number of subsamples: two genders, the two years of the financial crisis, youth, the retiring age group, and the post-retirement age group. Below we discuss the estimates from all models of levels (X.S.) and changes (F.E.) of SWL in Tables 5.3 and 5.4, organized by explanatory variable.

Females are significantly happier than males, conditional on experiencing equal measures of the other explanatory variables.[17] Being married is predictive of a huge advantage in well-being, as compared with being single. Becoming married is associated with an even bigger boost in SWL, in accord with other studies on the temporary SWL

17 There is no significant raw correlation between gender and life satisfaction.

enhancement associated with the year(s) just before and few years after weddings. Being widowed may be seen as something of an extension of marriage after the death of a partner and it is also strongly predictive of high SWL — nearly as strongly as marriage.

Table 5.3 Primary Estimates for SWL

	Pooled cross-section (X.S.)				Panel (F.E.)	
	(1)	(2)	(3)	(4)	(5)	(6)
female	**.11**†	**.13**†	**.12**†	**.12**†	**2.2**†	**2.1**†
	(.016)	(.016)	(.016)	(.016)	(.040)	(.046)
married	**.43**†	**.46**†	**.49**†	**.48**†	**.58**†	**.51**†
	(.021)	(.027)	(.027)	(.027)	(.061)	(.061)
separated	**−.38**†	**−.31**†	**−.26***	**−.27**†	.12	.023
	(.081)	(.083)	(.081)	(.080)	(.14)	(.14)
divorced	**−.30**†	**−.17**†	**−.16**†	**−.16**†	*.17*$^{+}$	.031
	(.045)	(.048)	(.048)	(.048)	(.10)	(.100)
widowed	**.48**†	**.28**†	**.33**†	**.31**†	**.62**†	**.47**†
	(.039)	(.046)	(.046)	(.046)	(.10)	(.10)
log(HH inc_{adj})	**.38**†	**.37**†	**.37**†	**.36**†	**.19**†	**.20**†
	(.010)	(.010)	(.010)	(.010)	(.014)	(.014)
PR:	***−.070***	***−.066***	***−.065***		**.96**†	.046
log(GDP/capita)	(.029)	(.029)	(.029)		(.10)	(.12)
PR: log(HH	.024	−.071	**−1.08**†		***−.24***	**−1.24**†
inc_{adj})_KLIPS	(.047)	(.047)	(.069)		(.092)	(.11)
log(total	**.20**†	**.27**†	**.27**†	**.27**†	**.097**†	**.094**†
spending)	(.012)	(.013)	(.013)	(.013)	(.021)	(.021)
PR: log(total	**−.24**†	**−.18**†	**.16***		***.44***	.23
spending)	(.046)	(.045)	(.048)		(.22)	(.21)
log(total assets)	**.044**†	**.041**†	**.043**†	**.043**†	**.019**†	**.020**†
	(.002)	(.002)	(.002)	(.002)	(.002)	(.002)
log(total debt)	**−.013**†	**−.012**†	**−.010**†	**−.010**†	*−.004*$^{+}$	−.003
	(.001)	(.001)	(.001)	(.001)	(.002)	(.003)
in school	**.25**†	**.19***	**.19***	***.17***	.17	.21
	(.069)	(.069)	(.069)	(.069)	(.14)	(.13)
childcare	.088	*.15*$^{+}$	.11	.11	.018	.026
	(.080)	(.079)	(.078)	(.078)	(.15)	(.14)
doing nothing	***.16***	.067	.052	.039	.050	.013
	(.070)	(.068)	(.068)	(.068)	(.13)	(.13)
domestic	*.14*$^{+}$	**.20***	**.19***	***.17***	.16	.13
	(.071)	(.070)	(.070)	(.070)	(.13)	(.13)
school and work	**.32**†	**.27**†	**.22***	**.21***	.17	.17
	(.080)	(.080)	(.080)	(.079)	(.16)	(.15)

Table 5.3 | Continue

	Pooled cross-section (X.S.)				Panel (F.E.)	
	(1)	(2)	(3)	(4)	(5)	(6)
other and work	.066	.14	.036	−.006	.19	.12
	(.10)	(.099)	(.099)	(.099)	(.15)	(.15)
home and work	***−.18***	−.044	−.068	−.081	.088	.072
	(.076)	(.075)	(.075)	(.074)	(.14)	(.13)
working	−.007	*.12*$^{+}$	.099	.081	*.23*$^{+}$	.19
	(.069)	(.067)	(.068)	(.067)	(.13)	(.13)
unemployed	**−.68**†	**−.55**†	**−.53**†	**−.53**†	**−.22**†	**−.20**†
	(.037)	(.037)	(.037)	(.036)	(.057)	(.057)
current health	**.16**†	**.17**†	**.17**†	**.17**†	**.14**†	**.14**†
	(.003)	(.003)	(.003)	(.003)	(.006)	(.006)
education level	**.096**†	**.12**†	**.12**†	**.12**†	***.048***	.019
	(.006)	(.007)	(.007)	(.007)	(.023)	(.022)
age-group f.e.		✓	✓	✓		
year f.e.			✓			✓
year-PR f.e.				✓		
Indiv f.e.					✓	✓
obs.	113417	113417	113417	113417	82299	82299
R^2(adj)	.222	.233	.243	.253	.062	.070
$N_{clusters}$	16747	16747	16747	16747	9860	9860
R^2(overall)					.026	.035

Notes: Our baseline cross-sectional and fixed-effect models of SWL are found in columns (3) and (6). Standard errors in parentheses are clustered at the individual level. Significance: $^{+}$ 10%, ***5%***, * 1%, † 0.1%.

Interestingly, in the full sample, becoming a widow is fully as positive a predictor of a change in SWL as becoming married. However, this effect is revealed to be entirely due to the improved situation women appear to experience when their husband dies. This is an important finding if it can be ascribed to the burden on women of looking after an ailing husband before his death. In fact, the state of marriage is overall highly significantly less predictive of high SWL for women than men. By contrast, living with a divorced or separated status has similar negative associations with SWL for the two genders. On the other hand, transition to these states does not predict a downward shift in SWL in our models, likely due to the fact that they are symptoms or even resolutions of existing problems, rather than signs of new ones.

Table 5.4 SWL Models Applied To Special Populations and the Financial Crisis Period

	Everyone		males		females		2008–2009		age<22		60<age<70		age>70	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
female	**.12**†	**2.1**†					**.13**†	**2.1**†	**.11***		**.18***		**.24**†	**2.1**†
	(.016)	(.046)					(.026)	(.12)	(.035)		(.056)		(.069)	(.12)
married	**.49**†	**.51**†	**.62**†	**.51**†	**.29**†	**.50**†	**.48**†	.14	**.93***	**2.5**†	.21	.23	−.18	***.43***
	(.027)	(.061)	(.036)	(.084)	(.044)	(.090)	(.046)	(.30)	(.34)	(.17)	(.25)	(.35)	(.58)	(.20)
separated	**−.26***	.023	**−.29***	−.14	***−.27***	.18	−.24	−.0006			***−.85***	−.075	-1.11^{+}	−.022
	(.081)	(.14)	(.11)	(.20)	(.11)	(.20)	(.15)	(.70)			(.37)	(.37)	(.65)	(.16)
divorced	**−.16**†	.031	**−.19***	−.14	***−.16***	.21	$-.15^{+}$	−.48			***−.58***		−.68	
	(.048)	(.100)	(.065)	(.14)	(.070)	(.14)	(.078)	(.46)			(.26)		(.63)	
widowed	**.33**†	**.47**†	$.15^{+}$	−.042	**.19***	**.65**†	***.18***	.51			.005	.36	−.47	**.53**†
	(.046)	(.10)	(.083)	(.17)	(.062)	(.12)	(.076)	(.43)			(.26)	(.39)	(.58)	(.14)
log(HH inc_{adj})	**.37**†	**.20**†	**.34**†	**.20**†	**.39**†	**.19**†	**.37**†	**.21**†	**.36**†	**.18***	**.32**†	**.16**†	**.28**†	**.11**†
	(.010)	(.014)	(.013)	(.021)	(.014)	(.017)	(.017)	(.045)	(.031)	(.061)	(.024)	(.030)	(.025)	(.032)
PR:	***−.065***	.046	***−.10***	−.13	−.033	.25	**−.35**†	−.80	***−.17***	.003	−.057	.31	−.16	−.071
log(GDP/capita)	(.029)	(.12)	(.041)	(.17)	(.040)	(.15)	(.047)	(.52)	(.076)	(.61)	(.084)	(.34)	(.10)	(.38)
PR: log(HH	**−1.08**†	**−1.24**†	**−.93**†	**−1.19**†	**−1.22**†	**−1.29**†	**−.43**†	**−1.30***	**−1.12**†	**−1.45**†	**−.93**†	**−1.00***	**−.77***	***−.98***
inc_{adj})_KLIPS	(.069)	(.11)	(.098)	(.16)	(.096)	(.15)	(.13)	(.40)	(.18)	(.43)	(.22)	(.34)	(.24)	(.40)
log(total	**.27**†	**.094**†	**.28**†	***.067***	**.25**†	**.12**†	**.30**†	**.19***	**.49**†	***.17***	**.20**†	.038	**.18**†	**.18***
spending)	(.013)	(.021)	(.018)	(.031)	(.018)	(.027)	(.024)	(.061)	(.056)	(.080)	(.034)	(.049)	(.034)	(.058)
PR: log(total	**.16***	.23	.085	.27	**.22***	.10	−.085	.69	−.046	.23	−.16	.79	.24	−.044
spending)	(.048)	(.21)	(.068)	(.28)	(.068)	(.31)	(.075)	(.79)	(.12)	(.98)	(.15)	(.64)	(.18)	(.69)
log(total assets)	**.043**†	**.020**†	**.040**†	**.019**†	**.045**†	**.022**†	**.038**†	.001	**.030**†	***.020***	**.049**†	**.018**†	**.064**†	**.034**†
	(.002)	(.002)	(.002)	(.003)	(.002)	(.003)	(.003)	(.007)	(.004)	(.008)	(.005)	(.005)	(.005)	(.007)
log(total debt)	**−.010**†	−.003	**−.009**†	−.002	**−.011**†	$-.005^{+}$	**−.012**†	−.003	−.002	−.007	***−.008***	−.002	.002	.0006
	(.001)	(.003)	(.002)	(.004)	(.002)	(.003)	(.002)	(.006)	(.004)	(.007)	(.004)	(.005)	(.005)	(.008)
in school	**.19***	.21	**.23***	.27	.11	.13	$.44^{+}$	−.42	.12	.009	−.043	−.64	1.29	.20
	(.069)	(.13)	(.085)	(.20)	(.12)	(.15)	(.23)	(.32)	(.17)	(.25)	(.42)	(.39)	(1.04)	(.75)

Table 5.4 | Continue

	Everyone		males		females		2008–2009		age<22		60<age<70		age>70	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
childcare	.11	.026	−.24	***−.56***	.15	.023	.34	−.55	−.049	**−1.11**⋆	.28	−.30	−.16	−.25
	(.078)	(.14)	(.24)	(.26)	(.13)	(.16)	(.24)	(.42)	(.39)	(.42)	(.31)	(.42)	(.43)	(.58)
doing nothing	.052	.013	.005	−.002	.11	.028	.22	*−.71*$^{+}$	−.20	−.26	.18	−.27	.25	.39
	(.068)	(.13)	(.083)	(.18)	(.12)	(.15)	(.23)	(.37)	(.19)	(.27)	(.27)	(.37)	(.34)	(.42)
domestic	**.19**⋆	.13	−.16	−.12	.18	.12	*.43*$^{+}$	−.45	.22	.50	.21	−.28	.12	.36
	(.070)	(.13)	(.13)	(.19)	(.12)	(.15)	(.23)	(.36)	(.33)	(.54)	(.28)	(.37)	(.34)	(.43)
school and work	**.22**⋆	.17	**.27**⋆	.27	.12	.071	***.47***	−.42	.19	−.029	*1.22*$^{+}$	.60		
	(.080)	(.15)	(.10)	(.24)	(.14)	(.17)	(.24)	(.35)	(.18)	(.26)	(.68)	(.53)		
other and work	.036	.12	.071	*.56*$^{+}$	.021	.044	.27	−.39	.20	.31	−.059	−.32	.063	.13
	(.099)	(.15)	(.22)	(.33)	(.14)	(.16)	(.26)	(.40)	(.29)	(.35)	(.35)	(.41)	(.41)	(.49)
home and work	−.068	.072	−.20	.24	−.078	.025	.10	−.35	.20	.82	.046	−.28	.28	.38
	(.075)	(.13)	(.16)	(.33)	(.12)	(.15)	(.23)	(.41)	(.65)	(.54)	(.29)	(.37)	(.37)	(.45)
working	.099	.19	.13	.24	.009	.14	*.38*$^{+}$	−.23	.050	.085	.10	−.28	.10	.36
	(.068)	(.13)	(.083)	(.19)	(.12)	(.14)	(.22)	(.35)	(.18)	(.27)	(.27)	(.37)	(.35)	(.43)
unemployed	**−.53**†	**−.20**†	**−.50**†	***−.19***	**−.54**†	***−.18***	**−.69**†	*−.31*$^{+}$	−.081	−.076	**−.44**⋆	−.051	−.33	*−.63*$^{+}$
	(.037)	(.057)	(.052)	(.083)	(.053)	(.078)	(.083)	(.17)	(.13)	(.21)	(.14)	(.13)	(.28)	(.38)
current health	**.17**†	**.14**†	**.17**†	**.13**†	**.17**†	**.15**†	**.19**†	**.14**†	**.13**†	**.13**†	**.17**†	**.13**†	**.18**†	**.12**†
	(.003)	(.006)	(.005)	(.009)	(.005)	(.006)	(.007)	(.013)	(.010)	(.017)	(.009)	(.010)	(.010)	(.014)
education level	**.12**†	.019	**.12**†	.013	**.11**†	.023	**.10**†	.002	***.041***	.048	**.081**†	−.078	**.095**†	.13
	(.007)	(.022)	(.009)	(.032)	(.010)	(.030)	(.011)	(.12)	(.017)	(.052)	(.017)	(.11)	(.023)	(.12)
age-group f.e.	✓		✓		✓		✓		✓		✓		✓	
year f.e.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Indiv f.e.		✓		✓		✓		✓		✓		✓		✓
model	X.S.	F.E.	X.S.	F.E.	X.S.	F.E.	X.S.	F.E.	X.S.	F.E.	X.S.	F.E.	X.S.	F.E.
obs.	113417	82299	54754	38894	58663	43405	23006	16752	10876	6914	12850	11195	9717	6794
R^2(adj)	.243	.070	.253	.070	.238	.072	.262	.053	.174	.041	.236	.045	.246	.048
$N_{clusters}$	16747	9860	8317	4770	8434	5091	12768	8974	3138	1867	2796	2276	1881	1172
R^2(overall)		.035		.19		.18		.033		.12		.13		.023

Notes: Standard errors in parentheses are clustered at the individual level. Significance: $^{+}$ 10%, ***5%***, ⋆ 1%, † 0.1%.

With KLIPS, we are able to include simultaneous measures of income, wealth, and consumption in explaining variation in SWL. It appears that levels and changes of these variables are each independently important in predicting SWL. In all cases, these ₩-denominated variables have been truncated to lie between their 1st and 99th percentiles, and $\sinh^{-1}()$-transformed as described in footnote 3; they are nevertheless referred to as log() values in the tables.

We find highly consistent effects from adjusted household income, total assets, and total debt, while introducing controls for age group, year, and region×year. This is true both for cross-section and fixed effects models using the whole sample. For income, there are also very small differences across the sub-population groups in Table 5.4, with the effect of income becoming slightly smaller only in old age.

Interestingly, assets and debt have asymmetric effects in our model, despite the distribution of positive and negative assets being nearly symmetrical across the sample. Higher total debt predicts lower SWL (except in the oldest group) but larger assets have a much stronger link to higher SWL. Similarly, changes in assets are important for predicting changes in SWL, except during the financial crisis, while the effect of changes in debt is constrained to be much smaller.

Contextual variables are included to account for the positive and negative externalities which may, for example, come through tax-funded public goods, general levels of economic activity, or income and spending reference levels acting as norms or standards (Barrington-Leigh, 2014).

Controlling for the three regional mean values (by year) of GDP per capita, average household income from KLIPS, and average household expenditures from KLIPS results in the same point estimates for other variables as including catch-all regional fixed effects (column 4 of Table 5.3). In general, cross-sectional estimated effects of local income and spending standards are negative, except in the case of column (3) of Table 5.3, where the estimated coefficient for average local spending is positive, but the sum of coefficients for average household spending and average household income is still highly negative.

Based on the estimated effects of changes to GDP/capita and average spending, inclusion of year fixed effects appears to be important when modeling dynamic changes to SWL. In our baseline fixed effects model

(column 6 of Table 5.3), the contextual effects are imprecisely constrained (i.e. estimated with wide confidence intervals) except that the effect of increases in local household income have a negative impact on life satisfaction that greatly outweighs the positive advantage to increases in one's own household income.

These general patterns hold with remarkable consistency across the subsamples of Table 5.4, with negative externalities of local economic growth appearing to trump any benefits to individuals.

Remaining estimated parameters mostly fit patterns reported for other countries. Controlling for the household measures discussed above, being a student or part time student is predictive of higher SWL, though estimates for the fixed effects model are imprecisely constrained. Unemployment and becoming unemployed have among the strongest of predictive powers for lower SWL and declines to SWL, respectively. Self-reported health status and changes therein are highly consistent predictors of SWL levels and shifts, regardless of age.

Somewhat unique to South Korea may be the fact that benefits ascribed to individual education level, after controlling for many other conditions and proxies for consumption flows, appear to persist robustly into old age. This may reflect a variety of social and consumptive benefits from education, which go beyond its role as a market human capital investment.

Overall, these results do not indicate radical shifts in the structure of estimates for older respondents or for the period of the financial crisis, nor do they indicate differences between women and men, except possibly for those to do with marriage and widowhood. In general, we find that social context and relations, where they are measured, loom large in our reduced form prediction of SWL. The importance of unemployment is, as is found universally in such studies, extremely large when expressed as an equivalent income, asset, or consumption change. Lastly, the accounting of various income, asset, and expenditure effects and externalities constitute rather remarkable findings because the overall marginal predicted effect of a simultaneous, region-wide uniform boost to income, assets, and consumption would be to reduce SWL, both in a step change and in long term levels. This interpretation is further discussed in the conclusion, below.

6. Conclusions

When social, cultural, institutional, or economic changes are especially rapid, the likelihood of confounding age-cohort effects is especially strong. Trends experienced by individuals or by narrowly-defined cohorts may give radically different evidence. In the case of subjective well-being in South Korea, we find that individuals of essentially all ages have tended to experience a rapid increase in reported life satisfaction over the period 1998–2012. Satisfaction with more narrowly defined domains of life has also risen over time for individuals for some domains, while others appear to evolve in accordance with a more stable life cycle path.

We have estimated static and dynamic models of life satisfaction which incorporate a range of predictive variables. Importantly, we looked for consistency and variation in the pattern of estimated effects for different groups in the population. It appears that marriage may, overall, still be a less good deal for women than men. More significantly, the transition to widowhood for women who outlive their husbands appears to be a highly positive outcome for the survivors. This implies that society is accepting and supportive of widowed women but likely also that the domestic burden on women who are caring for their elderly husbands needs attention from social support systems and from new policy. Such support may be targeted towards the emotional burden from empathy for a suffering loved one, or simply the labour and personal restrictions involved in caring for someone full-time. However, regardless of whether society's unequal expectations of females to play caretaking roles is an important factor, the simple fact that men's lifespans are shorter means there is an inequality between genders in supporting an elderly or sick spouse.

Under our specification of individual and regional effects at the province or city level, South Korea fits a pattern found elsewhere in which the negative spillovers of generally high incomes (after controlling for prices) and even of general income growth are as large or larger in magnitude than the positive effects of households' own income levels and gains (e.g., Barrington-Leigh and Helliwell, 2008). We are able to include wealth and expenditure measures in this analysis, and we find

negative effects which, rather than matching the positive effects, are significantly larger than the gains. This would, on the surface, imply a syndrome of "immiserating growth", in which economic advance was making people considerably less happy rather than happier. How do we reconcile this with our opening, optimistic finding that South Korea is experiencing not just growth in affluence but also nearly universal growth in life satisfaction across various dimensions of the population?

First of all, the missing measure in any analysis which looks for spillovers at the regional level is the possible spillovers which come from even broader levels of government and society. Variation and changes at the national level, however, cannot be captured with data from a single country. We have proposed elsewhere (Barrington-Leigh, 2012) that the evidence is consistent with most of the net benefits of economic growth accruing through diffuse public goods of one form or another — both tax funded at broad levels of government, and through broad shifts in social norms and social contracts, which develop along with economic growth.

Two further caveats in regard to the South Korean data are in order. Based on our findings presented here, South Korea stands now as one of the clearest examples extant of rapid economic growth coupled with a rapid rise in life satisfaction. However, this might not be taken as evidence for a systematic association between the two, nor as evidence against the Easterlin Paradox. Firstly, a bivariate analysis is simplistic, given all the other social and institutional factors which may be changing simultaneously, which may be independently amenable to policy influence, and which may be more or less important for raising well-being. Secondly, according to Easterlin *et al*. (2010)'s criterion, the Easterlin Paradox is a lack of correlation between growth *rates* in income and SWL across countries. Therefore, instances of simultaneous rises in the two variables are not by themselves evidence for a relationship—nor even a correlation—between the two.

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Appendix

Appendix Table 5.1 Age-Free Model Estimate of SWL

	female	married	separated	divorced	widowed	log(HH inc_{adj})	retired	studying	household size	dFirstIncomeYears	constant	obs.	R^2(adj)	$N_{clusters}$
(1)	**.052**†	**.25**†	**−.81**†	**−.74**†	**−.19**†	**.59**†	***.066***	**.45**†	**.060**†	**.70**†	**1.25**†	169789	.143	19199
	(.015)	(.018)	(.081)	(.044)	(.034)	(.008)	(.027)	(.019)	(.006)	(.023)	(.062)			

Notes: Standard errors in parentheses are clustered at the individual level. Significance: + 10%, ***5%*** , *** 1%,** **† 0.1%.**

Appendix Table 5.2 | Pooled Estimates of Domain Satisfactions Weights for SWL across Cohorts

	(1) 1910–1919	(2) 1920–1929	(3) 1930–1939	(4) 1940–1949	(5) 1950–1959	(6) 1960–1969	(7) 1970–1979	(8) 1980–1989	(9) 1990–1999
current health	**.073***	**.072**†	**.086**†	**.079**†	**.081**†	**.070**†	**.062**†	**.054**†	**.042**†
	(.028)	(.013)	(.008)	(.008)	(.007)	(.007)	(.007)	(.006)	(.010)
Satisfaction with	**.21**†	**.18**†	**.17**†	**.19**†	**.23**†	**.22**†	**.19**†	**.18**†	**.18**†
household income	(.036)	(.018)	(.010)	(.010)	(.007)	(.008)	(.007)	(.008)	(.014)
Satisfaction with	.068	**.19**†	**.20**†	**.18**†	**.16**†	**.17**†	**.13**†	**.16**†	**.14**†
leisure activities	(.060)	(.022)	(.012)	(.011)	(.008)	(.008)	(.008)	(.008)	(.016)
Satisfaction with	**.21***	**.19**†	**.17**†	**.17**†	**.19**†	**.18**†	**.19**†	**.17**†	**.18**†
housing	(.068)	(.026)	(.012)	(.010)	(.009)	(.008)	(.008)	(.009)	(.018)
Satisfaction with family	**.19***	.021	**.095**†	**.071**†	**.066**†	**.090**†	**.079**†	**.079**†	**.13**†
relations	(.066)	(.026)	(.015)	(.012)	(.009)	(.010)	(.009)	(.010)	(.017)
Satisfaction with	.034	**.25**†	**.16**†	**.16**†	**.15**†	**.12**†	**.17**†	**.17**†	**.14**†
relatives	(.082)	(.030)	(.017)	(.015)	(.010)	(.010)	(.011)	(.013)	(.022)
Satisfaction with social	**.26**†	**.16**†	**.19**†	**.21**†	**.20**†	**.22**†	**.23**†	**.24**†	**.20**†
relations	(.060)	(.025)	(.016)	(.013)	(.010)	(.012)	(.010)	(.012)	(.021)
β coefs	✓	✓	✓	✓	✓	✓	✓	✓	✓
obs.	460	2985	9276	13272	19262	22163	24944	16562	5718
R^2(adj)	.668	.674	.646	.609	.607	.577	.593	.589	.584
$N_{clusters}$	109	479	1178	1625	2436	2903	3747	2781	1551
log likelihood	−395	−2560	−8339	−12598	−18334	−21906	−24187	−16128	−5604

Notes: |Pooled regression. Estimates are shown graphically in Figure 5.9. Standard errors in parentheses are clustered at the individual level. Significance: $^{+}$ 10%, ***5%***, * **1%**, † **0.1%**.